UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results and sample locality map for stream-sediment and panned-concentrate samples from The Pinnacles Addition to the River of No Return Wilderness, Valley County, Idaho

By

Betty M. Adrian, John D. Sharkey,

and Gary A. Nowlan

Open-File Report 84-833

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Any use of trade names is for descriptive purposes only and does not imply endorsement by the USGS.

1984

CONTENTS

Page

Studies related to wilderness..... 1
Introduction..... 1
Methods of study..... 1
Sample media..... 1
Sample collection..... 3
Stream-sediment samples..... 3
Heavy-mineral-concentrate samples..... 3
Raw panned-concentrate samples..... 3
Sample preparation..... 3
Sample analysis..... 4
Spectrographic method..... 4
Other methods..... 4
Rock Analysis Storage System (RASS)..... 4
Description of Data Tables..... 4
References cited..... 5

ILLUSTRATIONS

FIGURE 1. Index map, The Pinnacles Addition to the River of No Return Wilderness, Idaho..... 2

PLATE 1. Map of stream-sediment and panned-concentrate sample sites, The Pinnacles Addition to the River of No Return Wilderness, Valley County, Idaho.....In pocket

TABLES

TABLE 1. Limits of determination for spectrographic analysis of stream sediments..... 7

TABLE 2. Lower limits of determination for methods other than the spectrographic method..... 8

TABLE 3. Analyses of stream-sediment samples..... 9

TABLE 4. Analyses of heavy-mineral-concentrate samples..... 13

TABLE 5. Gold in raw panned-concentrate samples..... 17

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral values if any, that may be present. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geochemical survey of The Pinnacles Addition to the River of No Return Wilderness in the Payette National Forest, Valley County, Idaho. The area was established as a wilderness by Public Law 96-312, July 23, 1980.

INTRODUCTION

In July, 1983 the U.S. Geological Survey conducted a reconnaissance geochemical survey of The Pinnacles Addition to the River of No Return Wilderness, Valley County, Idaho.

The Pinnacles Addition comprises about 44 mi^2 (114 km^2) in the north-central part of Valley County, Idaho, and lies about 55 mi (89 km) east of McCall, Idaho (see figure 1). Access to the study area is provided by secondary roads from McCall or Cascade; both towns are on Idaho Route 55.

Tertiary rhyolite tuffs and latite tuffs of the Challis Volcanics cover a little over half of The Pinnacles Addition in roughly a six-mile wide band cutting across the addition from southeast to northwest. Northeast and southwest of the Challis Volcanics lie the Precambrian Hoodoo Quartzite and the Precambrian Yellowjacket Formation. The Hoodoo Quartzite is mainly clean, white quartzite. The Yellowjacket consists of metamorphosed argillite, siltite, limestone, and volcanic rocks. Cretaceous granites of the Idaho batholith intrude the Precambrian units mainly on the southwestern side of the band of Challis Volcanics.

Mines that have been major producers of several commodities are within a few miles of The Pinnacles Addition. The commodities include tungsten, antimony, gold, silver, mercury, and base metals.

The Pinnacles Addition is an area of rugged, glaciated mountains characterized by rushing mountain streams that issue from glacial tarns. Elevation ranges from 9273 ft (2826 m) at the summit of The Pinnacles to about 5600 ft (1707 m) along Big Creek at the northern end of the addition.

Geology and ore deposits of The Pinnacles Addition and vicinity are summarized by Leonard and others (in preparation).

Samples were collected by G. A. Nowlan, S. C. Rose, and G. P. Pudlik. Analyses were by B. M. Adrian, J. D. Sharkey, T. A. Roemer, and K. A. Romine.

METHODS OF STUDY

Sample Media

Analyses of the stream-sediment samples represent the chemistry of the rock material eroded from the drainage basin upstream from each sample site. Such information is useful in identifying those basins which contain concentrations of elements that may be related to mineral deposits. Panned-concentrate samples provide information about the chemistry of a limited number of minerals in rock material eroded from the drainage basin upstream from each sample site. The selective concentration of minerals, many of which are ore-related, permits determination of some elements that are not easily detected in stream-sediment samples.

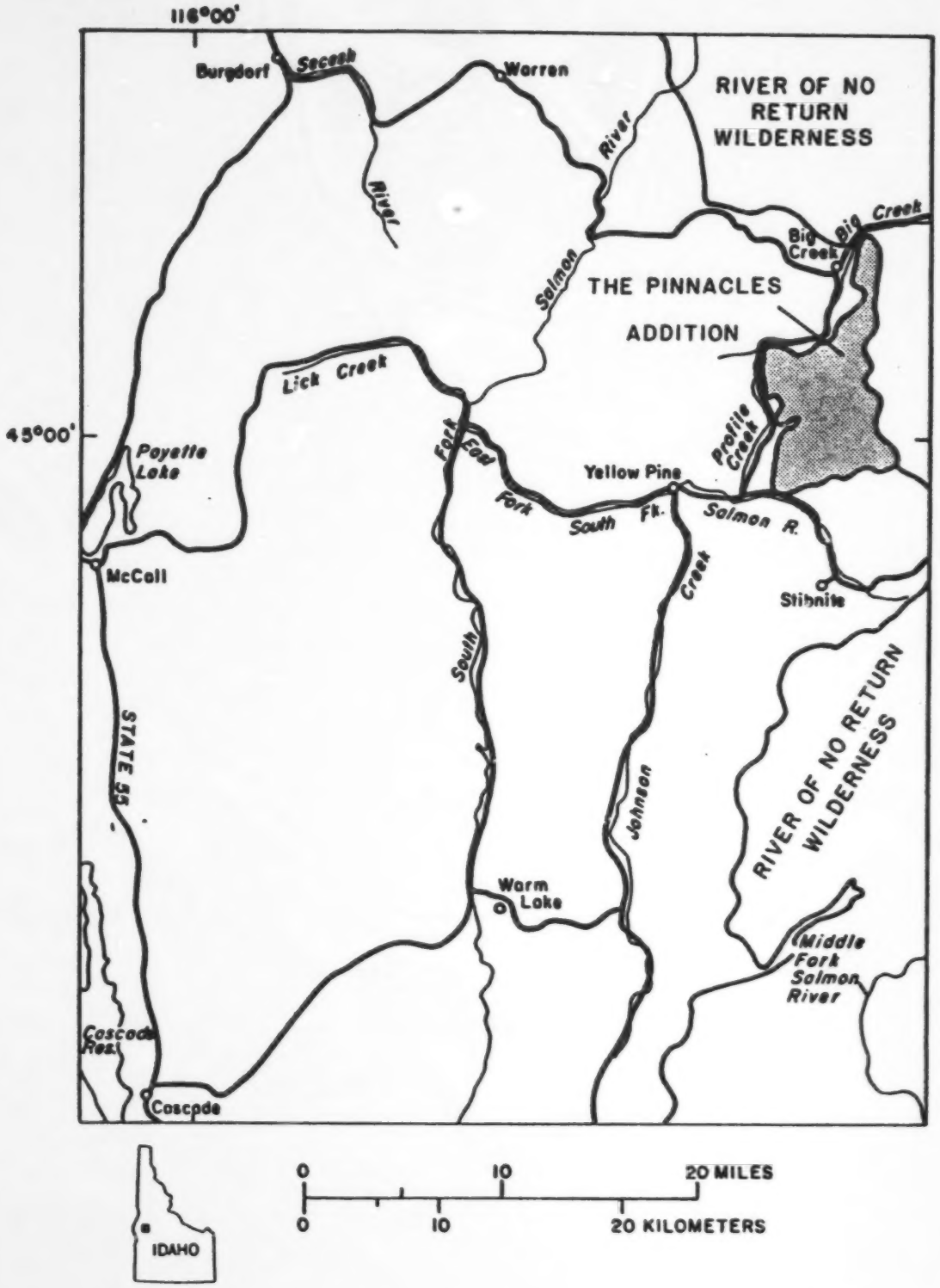


Figure 1. Index map, The Pinnacles Addition to the River of No Return Wilderness, Valley County, Idaho.

Sample Collection

Samples were collected at 84 sites (plate 1). At all of the sites, a stream-sediment sample was collected; at most of the sites two panned-concentrate samples were collected. The two panned-concentrate samples will be referred to as the heavy-mineral-concentrate sample and the raw panned-concentrate sample. Sampling density was about 1 sample site per square mile.

Stream-sediment samples

The stream-sediment samples consisted of grab samples of active alluvium collected primarily from first-order (unbranched) and second-order (below the junction of two first-order) streams as shown on USGS topographic maps (scale = 1:24,000).

Heavy-mineral-concentrate samples

Heavy-mineral-concentrate samples were collected from the same active alluvium as the stream-sediment samples. Each bulk sample was screened with a 2.0-mm (10-mesh) screen to remove the coarse material. The less than 2.0-mm fraction was panned until most of the quartz, feldspar, organic material, and clay-sized material were removed.

Raw panned-concentrate samples

A heaping 16-inch pan of unscreened alluvium was panned until about 10 g remained.

Sample Preparation

The stream-sediment samples were oven dried at less than 60°C, then sieved using 80-mesh (0.17-mm) stainless-steel sieves. The portion of the sediment passing through the sieve was saved for analysis.

After oven drying at less than 60°C, bromoform (specific gravity 2.8) was used to remove the remaining quartz and feldspar from the heavy-mineral-concentrate samples that had been panned in the field. The resultant heavy mineral sample was separated into three fractions using a large electromagnet (in this case a modified Frantz Isodynamic Separator). The most magnetic material, primarily magnetite, was not analyzed. The second fraction, largely ferromagnesian silicates and iron oxides, was saved for analysis/archival storage. The third fraction (the least magnetic material including the nonmagnetic ore minerals, zircon, sphene, etc.) was split using a Jones splitter. One split was hand-ground for spectrographic analysis; the other split was saved for mineralogical analysis. These magnetic separates are the same separates that would be produced by using a Frantz Isodynamic Separator set at a slope of 15° and a tilt of 10° with a current of 0.1 ampere to remove the magnetite and ilmenite, and a current of 1.0 ampere to split the remainder of the sample into paramagnetic and nonmagnetic fractions.

The raw panned-concentrate samples were dried at less than 60°C and then were analyzed for gold without further preparation.

Sample Analysis

Spectrographic method

The stream-sediment and heavy-mineral-concentrate samples were analyzed for 31 elements using a semiquantitative, direct-current arc emission spectrographic method (Grimes and Marranzino, 1968). The elements analyzed and their lower limits of determination are listed in table 1. Spectrographic results were obtained by visual comparison of spectra derived from the sample against spectra obtained from standards made from pure oxides and carbonates. Standard concentrations are geometrically spaced over any given order of magnitude of concentration as follows: 100, 50, 20, 10, and so forth. Samples whose concentrations are estimated to fall between those values are assigned values of 70, 30, 15, and so forth. The precision of the analytical method is approximately plus or minus one reporting interval at the 83 percent confidence level and plus or minus two reporting intervals at the 96 percent confidence level (Motooka and Grimes, 1976). Values determined for the major elements (Ca, Fe, Mg, and Ti) are given in weight percent; all others are given in parts per million (micrograms/gram).

Other Methods

Other methods of analysis used on samples from The Pinnacles Addition are summarized in table 2.

Analytical results are listed in tables 3, 4, and 5.

ROCK ANALYSIS STORAGE SYSTEM

Upon completion of all analytical work, the analytical results were entered into a computer-based file called Rock Analysis Storage System (RASS). This data base contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and converted to a binary form (STATPAC) for computerized statistical analysis or publication (VanTrump and Miesch, 1976).

DESCRIPTION OF DATA TABLES

Tables 3-5 list the analyses for the samples of stream sediment, heavy-mineral concentrate, and raw panned concentrate, respectively. For the three tables, the data are arranged so that column 1 contains the USGS-assigned sample identifications. The numeric portions of the identifications correspond to the numbers shown on the site location map (plate 1). Some elements (As, Cd, Sb, and Zn) were analyzed both by emission spectrography and atomic absorption; atomic-absorption results for those elements are denoted by the letter "a" following the element heading. A letter "N" in tables 3 and 4 indicates that a given element was looked for but not detected at the lower limit of determination shown for that element in tables 1 and 2. If an element was observed but was below the lowest reporting value, a "less than" symbol (<) was entered in the tables in front of the lower limit of determination. If an element was observed but was above the highest reporting value, a "greater than" symbol (>) was entered in the tables in front of the upper limit of determination. Because of the formatting used in the computer program that produced tables 3 and 4, some of the elements listed in these

tables (Ca, Fe, Mg, Ti, Ag, and U) carry one or more nonsignificant digits to the right of the significant digits. The analysts did not determine these elements to the accuracy suggested by the extra zeros.

The lower limit of determination for Au by atomic absorption is 0.05 ppm, based on a 10-g sample (table 2). Because the sample weight for raw panned concentrates is variable in this study, the lower limit of determination is variable when reported in terms of ppm (table 5). However, the Au method used for this study will detect 0.5 µg of Au, as reflected in table 5 by the last column (Au per pan, µg). The reported amount of Au in table 5 for samples IG2026 and IG3091 is adjusted to compensate for the fact that either more or less than one pan of alluvium was panned.

The spectrographic determinations for Au, Bi, Cd, Sb, Sn, and W in stream-sediment samples and for Sb in heavy-mineral-concentrate samples were all below the lower limits of determinations shown in table 1; consequently, the columns for these elements have been deleted from tables 3 and 4, respectively.

Latitudes and longitudes listed in tables 3-5 are based on 1:24,000-scale U.S. Geological Survey topographic maps of the Big Creek, Edwardsburg, Profile Gap, Stibnite, and Yellow Pine quadrangles. The listed coordinates may not conform precisely to the plotted locations in plate 1.

REFERENCES CITED

Centanni, F. A., Ross, A. M., and DeSesa, M. A., 1956, Fluorometric determination of uranium: Analytical Chemistry, v. 28, p. 1651.

Grimes, D. J., and Marranzino, A. P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Hopkins, D. M., 1977, An improved ion-selective electrode method for the rapid determination of fluorine in rocks and soils: U.S. Geological Survey Journal of Research, v. 5, no. 5, p. 583-593.

Leonard, B. F., Kleinkopf, M. D., Nowlan, G. A., and Jayne, D. I., 1984, Mineral resource potential of The Pinnacles Addition to the River of No Return Wilderness, Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF- , scale 1:50,000 (in preparation).

McNerney, J. J., Buseck, P. R., and Hanson, R. C., 1972, Mercury detection by means of thin gold films: Science, v. 178, p. 611-612.

Motooka, J. M., and Grimes, D. J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 738, 25 p.

Thompson, C. E., Nakagawa, H. M., and Van Sickle, G. H., 1968, Rapid analysis for gold in geologic materials, in Geological Survey research 1968: U.S. Geological Survey Professional Paper 600-B, p. B130-B132.

VanTrump, George, Jr., and Miesch, A. T., 1976, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

Vaughn, W. W., and McCarthy, J. H., Jr., 1964, An instrumental technique for the determination of submicrogram concentrations of mercury in soils, rocks, and gas, in Geological Survey research 1964: U.S. Geological Survey Professional Paper 501-D, p. D123-D127.

Viets, J. G., 1978, Determination of silver, bismuth, cadmium, copper, lead, and zinc in geologic materials by atomic absorption spectrometry with tricaprylylmethylammonium chloride: Analytical Chemistry, v. 50, p. 1097-1101.

TABLE 1.--Limits of determination for the spectrographic analysis of stream sediments, based on a 10-mg sample

[The spectrographic limits of determination for heavy-mineral-concentrate samples are based on a 5-mg sample, and are therefore two reporting intervals higher than the limits given for rocks and stream sediments]

Elements	Lower determination limit	Upper determination limit
	Percent	
Iron (Fe)	0.05	20
Magnesium (Mg)	.02	10
Calcium (Ca)	.05	20
Titanium (Ti)	.002	1
	Parts per million	
Manganese (Mn)	10	5,000
Silver (Ag)	0.5	5,000
Arsenic (As)	200	10,000
Gold (Au)	10	500
Boron (B)	10	2,000
Barium (Ba)	20	5,000
Beryllium (Be)	1	1,000
Bismuth (Bi)	10	1,000
Cadmium (Cd)	20	500
Cobalt (Co)	5	2,000
Chromium (Cr)	10	5,000
Copper (Cu)	5	20,000
Lanthanum (La)	20	1,000
Molybdenum (Mo)	5	2,000
Niobium (Nb)	20	2,000
Nickel (Ni)	5	5,000
Lead (Pb)	10	20,000
Antimony (Sb)	100	10,000
Scandium (Sc)	5	100
Tin (Sn)	10	1,000
Strontium (Sr)	100	5,000
Vanadium (V)	10	10,000
Tungsten (W)	50	10,000
Yttrium (Y)	10	2,000
Zinc (Zn)	200	10,000
Zirconium (Zr)	10	1,000
Thorium (Th)	100	2,000

Table 2.--Lower limits of determination for methods other than the spectrographic method

[AA = atomic absorption; I = instrumental; SI = specific ion; and F = fluorometry]

Element or constituent determined	Sample Type	Method	Determination limit (ppm)	Reference
Gold (Au)	Raw panned concentrate	AA	0.05*	Thompson and others, 1968.
Mercury (Hg)	Sediments	I	0.02	Modification of McNerney and others, 1972, and Vaughn, and McCarthy, 1964.
Arsenic (As)	"	AA	10	Modification of Viets, 1978.
Antimony (Sb)	"	AA	2	
Zinc (Zn)	"	AA	5	
Cadmium (Cd)	"	AA	0.1	
Fluorine (F)	"	SI	100	Hopkins, 1977.
Uranium (U)	"	F	0.05	Modification of Centanni and others, 1956.

*Based on a 10-g sample

Table 3.--Analyses of stream-sediment samples, The Pinnacles Addition, River of No Return Wilderness, Idaho

[N, NOT DETECTED; <, DETECTED BUT BELOW THE LIMIT OF DETERMINATION SHOWN; >, DETERMINED TO BE GREATER THAN THE VALUE SHOWN.]

SAMPLE	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	As-a	B	Ba	Be	Cd-a	Co	Cr	Cu	F	Mo	La
IA2026	45 2 51	115 22 2	.5	.5	.10	.07	N	N	N	10	200	5	.2	N	<10	5	300	.14	70
IA2027	45 2 48	115 22 9	.3	2.0	.50	.30	N	N	20	50	500	7	N	5	10	15	400	.08	100
IA2028	45 2 49	115 22 10	.3	1.0	.15	.20	N	N	60	30	300	7	.1	<5	<10	7	400	.04	100
IA2029	45 5 12	115 18 20	.7	2.0	.70	.30	.5	N	20	50	700	5	N	7	50	20	600	.06	100
IA2030	45 6 1	115 19 24	1.0	5.0	1.50	.50	N	N	30	300	700	3	N	15	100	30	300	.16	50
IA2031	44 59 21	115 17 41	.5	1.5	.30	.20	<.5	N	20	30	700	3	N	<5	10	10	300	.06	100
IA2032	44 59 23	115 17 47	.7	2.0	.50	.70	N	N	30	50	500	3	.1	7	50	15	200	.06	70
IA2033	44 59 28	115 18 16	1.5	3.0	2.00	.50	N	N	20	150	500	5	N	10	50	20	500	.04	70
IA2034	44 59 45	115 18 43	2.0	2.0	2.00	.30	N	N	50	100	300	5	.1	10	50	15	500	.04	50
IA2035	44 59 45	115 18 38	1.0	2.0	.70	.30	N	N	10	50	500	5	N	5	15	10	300	.16	50
IA2036	44 59 47	115 18 40	.7	2.0	.50	.50	N	N	10	50	500	3	.2	7	20	15	400	.12	50
IA2037	44 59 45	115 19 1	.5	2.0	.50	.30	N	N	10	20	700	5	.1	5	10	10	300	.06	70
IA2038	44 59 9	115 21 2	1.0	3.0	1.00	.50	N	N	30	100	500	7	N	10	50	30	400	.06	70
IA2039	44 59 9	115 21 13	1.5	2.0	1.50	.50	N	N	50	100	200	3	N	7	70	20	700	.08	N
IA2040	44 59 5	115 21 11	1.0	5.0	2.00	.70	N	N	40	100	300	3	N	10	70	50	500	.04	100
IA2041	44 58 50	115 21 36	1.0	3.0	1.00	.30	N	N	50	150	300	5	N	10	70	50	400	<.02	70
IA2042	44 58 41	115 21 57	1.0	7.0	1.50	.50	N	N	20	70	500	5	N	15	70	70	300	.02	200
IA2043	44 58 31	115 22 13	.7	3.0	.50	.50	N	N	70	70	200	3	N	7	50	30	400	.04	70
IA2044	44 58 36	115 21 55	1.0	3.0	.70	.50	N	N	20	20	300	5	.1	10	70	50	500	.04	70
IA2045	44 58 34	115 22 4	1.0	5.0	1.50	.50	N	N	80	100	500	7	.1	10	70	50	400	.04	150
IA2046	44 58 16	115 22 32	.7	3.0	.50	.50	N	N	50	100	300	5	N	10	50	70	500	.04	70
IA2047	44 57 39	115 19 46	1.5	2.0	2.00	.50	N	N	40	100	300	3	N	10	70	30	500	.04	100
IA2048	44 57 38	115 19 45	.5	3.0	.70	.50	N	N	30	200	700	5	N	15	70	50	300	.06	300
IA2049	44 57 19	115 20 25	1.5	5.0	1.00	1.00	N	N	50	70	500	3	N	15	50	20	600	.04	200
IA2050	44 57 16	115 20 21	1.5	5.0	2.00	.50	N	N	30	200	500	3	N	15	70	30	300	.04	200
IA2058	44 57 39	115 17 7	2.0	5.0	5.00	1.00	N	N	40	200	300	2	N	15	70	30	300	.08	<20
IA2059	44 57 53	115 16 53	.5	3.0	.30	.30	.5	N	30	20	1,000	7	N	<5	15	15	300	.04	150
IA2060	44 57 53	115 16 55	.5	1.0	.20	.20	N	N	50	30	500	7	.1	N	10	7	300	.06	100
IA3041	45 2 19	115 18 53	.7	1.5	.30	.30	N	N	10	50	500	3	.2	N	15	20	300	.04	100
IA3042	45 2 16	115 18 56	.5	2.0	.15	.30	N	N	100	20	500	5	.3	N	<10	20	500	.04	100
IA3043	45 2 57	115 19 22	.5	1.0	.15	.20	N	N	70	30	500	3	.2	N	10	20	400	.04	150
IA3044	45 2 49	115 19 29	.7	2.0	.50	.30	N	N	90	50	1,000	3	.2	<5	10	15	300	.04	70
IA3045	45 2 52	115 19 22	.5	2.0	.20	.30	N	N	100	30	700	5	.6	<5	10	20	500	.04	150
IA3046	45 3 15	115 19 31	.7	.7	.10	.10	N	N	N	50	300	5	.2	N	<10	7	300	.10	150
IA3047	45 3 47	115 19 14	.5	5.0	.70	.70	N	N	30	50	1,000	5	N	10	70	20	600	.04	100
IA3048	45 3 42	115 19 19	.5	2.0	.30	.50	N	N	50	30	700	7	.1	5	10	30	300	.04	150
IA3049	44 57 20	115 21 54	1.5	5.0	1.00	1.00	N	N	80	150	300	5	N	15	70	30	500	.04	100
IA3050	44 57 41	115 23 11	.5	7.0	2.00	.50	N	N	60	70	500	5	N	15	100	50	400	.02	100
IA3051	44 57 38	115 23 45	1.0	5.0	.50	1.00	N	N	60	100	300	5	.1	10	150	30	400	.06	300
IA3052	44 57 41	115 24 21	1.0	7.0	.70	1.00	N	N	40	100	700	5	.1	15	200	20	400	.04	200

Table 1.--Analyses of stream-sediment samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

SAMPLE	Mn	Mo	Nb	Ni	Pb	Sb-a	Sc	Sr	Th	U	V	Y	Zn	Zn-a	Zr
IA2026	1,000	N	N	7	10	N	<5	N	N	32.00	20	30	N	55	150
IA2027	1,000	N	N	15	30	N	7	<100	N	10.00	30	50	N	70	200
IA2028	700	N	<20	7	30	N	5	<100	N	15.00	20	50	N	70	200
IA2029	1,000	N	N	15	30	2	10	200	N	11.00	70	70	N	70	300
IA2030	1,000	N	<20	20	20	<2	15	200	N	9.00	100	20	N	45	300
IA2031	300	N	N	5	30	<2	5	200	N	16.00	30	50	N	45	300
IA2032	500	N	<20	10	20	N	15	200	N	5.80	100	30	N	65	300
IA2033	500	N	N	30	15	N	5	200	N	3.50	50	30	N	25	200
IA2034	700	N	N	20	<10	N	5	200	N	1.90	50	20	N	30	200
IA2035	700	N	N	15	15	<2	5	200	N	11.00	50	30	N	40	200
IA2036	700	N	N	10	30	N	10	200	N	5.50	70	20	N	60	200
IA2037	700	N	N	10	20	N	7	200	N	10.00	50	50	N	70	300
IA2038	1,000	N	N	20	20	N	10	200	N	20.00	50	50	N	10	300
IA2039	300	N	N	20	<10	N	7	150	N	6.40	50	15	N	20	100
IA2040	500	N	<20	50	10	N	10	<100	N	5.00	70	50	N	10	200
IA2041	1,000	N	N	50	<10	N	10	<100	N	3.50	70	50	N	30	200
IA2042	1,000	N	<20	50	15	N	20	200	N	6.10	70	70	N	15	300
IA2043	700	N	<20	50	<10	N	10	<100	N	9.30	70	50	N	50	300
IA2044	1,000	N	<20	20	15	N	10	200	N	17.00	70	50	N	70	100
IA2045	1,000	N	<20	30	20	<2	10	150	N	14.00	70	70	N	40	300
IA2046	1,000	N	30	20	10	<2	10	150	N	7.40	70	50	N	25	300
IA2047	700	N	N	30	10	N	10	150	N	3.80	70	30	N	30	300
IA2048	1,000	N	20	50	20	N	10	200	<100	11.00	70	100	N	60	300
IA2049	700	N	<20	30	15	N	20	300	N	6.90	100	50	N	40	500
IA2050	1,000	N	20	50	15	N	20	200	N	5.90	70	50	N	25	300
IA2058	1,000	N	<20	50	<10	<2	15	150	N	1.80	100	20	N	20	300
IA2059	1,000	N	<20	7	50	<2	7	200	N	23.00	30	50	N	30	300
IA2060	500	N	N	7	15	<2	5	<100	N	19.00	20	50	N	35	200
IA3041	1,000	N	N	15	30	<2	7	<100	N	14.00	50	30	N	100	200
IA3042	1,500	N	N	15	50	<2	5	<100	N	3.60	30	30	N	130	300
IA3043	700	N	N	5	20	<2	7	150	N	17.00	20	70	N	70	200
IA3044	500	N	N	7	20	N	7	<100	N	8.30	30	30	N	55	200
IA3045	1,000	<5	N	7	30	N	7	<100	N	17.00	50	50	N	100	200
IA3046	700	N	N	15	15	N	5	<100	N	34.00	30	50	N	55	100
IA3047	1,000	<5	<20	30	30	N	10	300	N	5.20	70	50	N	55	500
IA3048	1,000	<5	<20	20	20	N	7	150	N	17.00	30	70	N	25	300
IA3049	1,000	N	20	20	10	<2	20	300	N	6.70	100	50	N	40	500
IA3050	700	N	<20	30	20	<2	15	200	N	8.20	100	50	N	25	300
IA3051	700	N	30	30	<10	<2	15	<100	N	7.10	200	70	N	30	300
IA3052	1,000	N	30	70	20	<2	20	150	N	3.40	200	100	N	25	300

Table 3.--Analyses of stream-sediment samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

SAMPLE	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	As-a	B	Ba	Be	Cd-a	Co	Cr	Cu	F	Hg	La
IA3053	44 59 8	115 24 44	1.0	7.0	1.50	.70	N	N	30	50	700	5	.1	20	100	30	400	.02	300
IA3054	45 1 20	115 17 26	.7	2.0	.50	.50	N	N	10	50	700	3	.2	5	20	15	200	.06	50
IA3055	45 0 37	115 18 2	1.0	2.0	.50	.50	N	N	10	50	500	3	.2	7	30	20	200	.10	150
IA3056	45 0 40	115 17 55	1.0	5.0	.70	.70	N	N	60	50	1,000	3	.1	10	50	20	200	.02	70
IA3057	45 0 43	115 18 25	.7	1.5	.20	.30	N	N	N	30	500	3	.4	N	10	15	300	.06	70
IA3058	45 0 19	115 18 58	.5	2.0	.30	.50	<.5	N	10	50	1,000	7	.2	5	20	10	300	.02	200
IA3059	45 0 18	115 18 52	1.0	3.0	.50	.70	N	N	10	50	1,000	3	.1	5	30	15	300	.04	70
IA3060	44 59 34	115 19 47	2.0	3.0	7.00	.50	N	N	20	100	500	5	.1	10	50	10	400	.02	<20
IA3061	45 0 45	115 20 8	1.0	2.0	.50	.50	N	N	20	50	500	7	.3	N	20	15	200	.04	70
IA3062	45 0 40	115 20 7	1.0	1.0	.70	.20	N	N	10	70	200	10	.7	N	20	15	200	.12	70
IA3063	45 0 17	115 19 59	1.0	2.0	.70	.50	N	N	60	100	300	7	.1	7	50	15	400	.06	50
IA3064	44 59 55	115 20 1	2.0	5.0	7.00	.50	N	N	<10	70	500	3	.1	15	50	20	500	.02	50
IA3065	44 59 57	115 19 57	1.0	.7	.30	.10	N	N	<10	30	200	3	.2	N	10	7	200	.06	50
IA3066	44 59 34	115 19 33	1.5	5.0	5.00	.50	N	N	20	150	500	10	.2	10	70	50	800	.04	100
IA3067	45 0 14	115 24 4	1.0	7.0	1.50	1.00	N	N	10	50	300	5	.1	15	100	100	500	.02	150
IA3068	45 1 0	115 21 52	.5	3.0	.50	.30	<.5	N	N	50	700	7	.1	5	10	20	300	.02	100
IA3069	45 0 30	115 22 18	2.0	5.0	10.00	.70	N	N	30	100	700	3	.1	15	50	50	600	.02	50
IA3070	45 0 19	115 22 43	1.5	1.0	1.00	.30	N	N	<10	100	200	3	.3	N	20	30	400	.10	50
IA3071	45 0 17	115 22 58	1.0	3.0	1.00	.50	N	N	20	200	500	5	.1	10	100	50	800	.06	70
IA3072	45 0 54	115 23 29	1.0	3.0	2.00	.50	N	N	10	100	500	5	.2	10	50	20	700	.02	50
IA3073	45 1 12	115 23 35	1.5	1.0	2.00	.30	.5	N	90	50	200	3	1.5	N	20	15	700	.02	50
IA3074	45 1 39	115 23 57	1.5	2.0	3.00	.50	N	N	30	70	500	3	.7	5	20	30	500	.04	100
IA3075	45 1 37	115 24 12	.7	1.0	.50	.30	1.0	N	10	50	200	3	.6	N	20	50	300	.10	100
IA3076	45 1 50	115 24 29	1.5	3.0	1.00	.50	N	N	60	30	300	5	.4	10	50	70	500	.04	100
IA3077	45 2 12	115 24 27	1.5	5.0	5.00	.50	.5	N	40	100	1,000	3	.1	10	70	30	500	.02	50
IA3078	45 2 30	115 25 17	1.0	3.0	1.00	.50	N	N	30	50	300	5	.6	10	100	30	400	.06	50
IA3079	45 3 2	115 24 17	.3	3.0	.70	.50	1.5	500	100	50	1,000	5	.2	10	100	30	400	.02	100
IA3080	45 3 57	115 24 3	.5	3.0	.20	.50	N	N	40	50	500	10	.2	5	10	15	300	.06	100
IA3081	45 3 46	115 25 2	1.0	2.0	.50	.50	.5	N	30	30	1,000	5	.2	7	30	20	200	.02	50
IA3082	45 4 19	115 24 23	1.0	1.5	.15	.20	<.5	N	20	50	300	10	.7	N	15	15	400	.06	70
IA3083	45 4 15	115 23 17	.3	1.5	.15	.30	N	N	10	20	500	7	.1	<5	15	7	500	.04	70
IA3084	45 4 17	115 23 23	.5	2.0	.20	.50	<.5	N	20	70	1,000	5	.1	7	20	15	400	.02	70
IA3085	45 4 8	115 21 50	.3	2.0	.15	.50	N	N	<10	20	1,000	5	N	5	10	10	300	.02	100
IA3086	45 4 11	115 21 51	.5	2.0	.20	.50	<.5	N	20	50	1,000	5	.1	7	30	15	300	.04	50
IA3087	45 4 44	115 20 4	.5	3.0	.30	.50	<.5	N	<10	30	1,000	5	.1	7	20	20	400	.04	150
IA3088	45 4 42	115 20 58	.7	3.0	.50	.50	.5	N	20	30	1,000	5	.2	10	50	30	500	.04	100
IA3089	45 7 6	115 19 1	.5	1.0	.20	.50	N	N	10	200	300	1	.1	N	20	7	200	.04	<20
IA3090	45 7 5	115 19 9	.7	5.0	.70	1.00	N	N	<10	200	700	2	N	15	50	15	300	.04	50
IA3091	45 8 18	115 19 8	1.5	5.0	1.00	.70	N	N	10	70	500	3	.1	15	50	50	400	.04	<20
IA3092	45 5 23	115 19 34	.7	.7	.15	.03	N	N	N	20	100	3	.2	N	15	20	500	.10	<20
IA3093	45 8 31	115 18 55	2.0	2.0	5.00	.30	N	N	<10	70	500	5	.1	7	30	30	700	.08	N
IA3094	45 7 42	115 19 31	1.0	7.0	2.00	.70	N	N	30	200	300	3	.1	15	100	50	500	<.02	100
IA3095	45 8 35	115 18 35	1.0	3.0	.70	.50	<.5	N	30	100	1,000	5	.1	10	50	15	500	.06	70
IA3096	45 9 3	115 17 53	1.0	5.0	.70	1.00	N	N	30	100	300	3	.3	15	70	70	300	.04	70

Table 3.--Analyses of stream-sediment samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

SAMPLE	Mn	Mo	Nb	Ni	Pb	Sb-a	Sc	Sr	Th	U	V	Y	Zn	Zn-a	Zr
IA3053	1,000	N	30	50	15	<2	15	200	N	2.30	100	70	N	45	500
IA3054	1,000	N	N	20	15	<2	7	200	N	7.60	70	30	N	70	300
IA3055	1,000	N	N	10	30	N	10	200	N	5.00	70	50	N	50	300
IA3056	700	N	N	15	30	N	15	200	N	7.10	100	50	N	65	300
IA3057	1,000	N	N	10	20	N	5	<100	N	2.30	30	20	N	100	200
IA3058	1,000	N	N	15	30	N	10	150	N	12.00	50	70	N	90	200
IA3059	1,000	N	<20	15	30	N	10	200	N	5.60	70	50	N	60	300
IA3060	1,000	N	<20	30	20	N	10	200	N	6.40	70	20	N	25	300
IA3061	500	N	N	10	30	<2	10	150	N	8.60	70	30	N	70	200
IA3062	2,000	N	N	10	15	N	5	<100	N	61.00	30	50	N	50	300
IA3063	300	N	<20	20	<10	N	7	150	N	31.00	50	50	N	30	100
IA3064	1,000	N	<20	30	20	N	10	200	N	1.40	70	50	N	15	200
IA3065	300	N	N	10	10	N	<5	N	N	38.00	20	30	N	40	50
IA3066	1,000	N	N	30	50	N	10	150	N	2.10	70	50	N	35	150
IA3067	1,000	<5	50	50	20	N	20	150	N	3.70	100	50	N	35	500
IA3068	1,000	N	20	7	70	N	10	150	N	15.00	20	70	N	15	200
IA3069	1,000	<5	<20	50	20	N	15	200	N	.91	70	50	N	40	200
IA3070	500	N	N	20	10	N	7	<100	N	1.20	30	70	N	40	100
IA3071	500	N	N	30	15	N	10	<100	N	9.10	70	50	N	70	200
IA3072	1,000	N	N	30	70	N	7	150	N	1.10	50	15	<200	60	100
IA3073	700	N	N	10	50	<2	5	<100	N	12.00	30	20	200	260	200
IA3074	700	N	N	15	300	<2	5	200	N	10.00	50	20	300	220	200
IA3075	1,000	N	N	15	20	N	5	<100	N	16.00	50	50	N	100	150
IA3076	700	<5	<20	20	20	N	10	<100	N	16.00	70	70	N	110	300
IA3077	500	N	<20	20	100	N	10	200	N	1.90	70	20	<200	45	300
IA3078	1,500	N	N	20	50	N	10	<100	N	12.00	100	30	N	130	200
IA3079	1,000	N	<20	20	100	N	7	200	N	4.00	50	30	<200	45	300
IA3080	1,000	N	N	10	15	<2	7	<100	N	6.20	50	50	N	140	200
IA3081	1,000	<5	<20	10	50	N	5	300	N	10.00	50	20	<200	50	300
IA3082	1,000	N	N	15	20	N	5	150	N	38.00	50	50	N	120	50
IA3083	500	N	N	10	10	N	5	<100	N	4.80	30	30	N	15	300
IA3084	1,000	<5	N	15	50	N	5	300	N	10.00	50	50	<200	30	200
IA3085	700	<5	20	5	30	N	7	200	N	6.40	30	30	N	10	300
IA3086	700	<5	<20	15	50	<2	7	300	N	6.60	70	20	<200	35	150
IA3087	1,000	<5	<20	10	50	N	10	200	N	17.00	50	50	N	15	200
IA3088	1,000	N	N	15	50	<2	20	300	N	8.30	70	50	N	90	200
IA3089	500	N	N	7	N	<2	5	N	N	3.80	70	15	N	35	150
IA3090	700	N	<20	15	15	N	10	150	N	2.70	100	30	N	25	200
IA3091	1,500	N	N	20	10	N	10	150	N	1.30	100	20	N	120	200
IA3092	300	N	N	10	<10	N	5	N	N	10.00	20	10	N	80	20
IA3093	1,000	N	N	15	N	<2	10	<100	N	2.40	70	20	N	55	150
IA3094	1,000	N	20	50	30	<2	20	200	N	.91	100	70	<200	110	200
IA3095	700	N	<20	15	30	<2	10	200	N	15.00	70	50	N	35	200
IA3096	2,000	N	N	20	30	<2	15	150	N	2.50	150	50	<200	120	200

Table 4.--Analyses of heavy-mineral-concentrate samples, The Pinnacles Addition, River of No Return Wilderness, Idaho

[N, NOT DETECTED; <, DETECTED BUT BELOW THE LIMIT OF DETERMINATION SHOWN; >, DETERMINED TO BE GREATER THAN THE VALUE SHOWN.]

SAMPLE	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu
IH2026	45 2 51	115 22 2	3.0	3.0	.50	>2.0	N	N	N	70	500	5	N	N	10	200	30
IH2027	45 2 48	115 22 9	1.0	3.0	1.00	>2.0	N	N	N	70	700	5	N	N	20	200	20
IH2028	45 2 49	115 22 10	1.0	1.5	.15	>2.0	100	N	500	50	200	2	N	N	10	50	15
IH2029	45 5 12	115 18 20	5.0	3.0	2.00	>2.0	10	N	N	200	500	3	700	N	10	150	15
IH2030	45 6 1	115 19 24	10.0	2.0	10.00	>2.0	N	N	N	2,000	10,000	2	N	N	30	100	10
IH2031	44 59 21	115 17 41	3.0	3.0	1.00	>2.0	50	N	200	100	500	5	N	N	20	200	15
IH2032	44 59 23	115 17 47	5.0	2.0	1.00	>2.0	N	N	N	70	200	3	N	N	20	200	30
IH2033	44 59 28	115 18 16	15.0	5.0	10.00	2.0	N	N	N	1,000	100	3	N	N	15	100	<10
IH2034	44 59 45	115 18 43	20.0	5.0	15.00	2.0	N	N	N	500	N	2	50	N	20	70	N
IH2035	44 59 45	115 18 38	20.0	5.0	15.00	>2.0	N	N	N	700	1,000	5	N	N	50	100	15
IH2036	44 59 47	115 18 40	7.0	5.0	2.00	>2.0	7	N	N	500	500	3	N	N	30	200	20
IH2037	44 59 45	115 19 1	7.0	3.0	1.00	>2.0	N	N	N	50	300	5	N	N	15	200	30
IH2038	44 59 9	115 21 2	20.0	5.0	15.00	2.0	N	N	N	500	100	3	N	N	20	70	30
IH2040	44 59 5	115 21 11	20.0	5.0	10.00	>2.0	N	N	N	700	500	3	N	N	15	150	N
IH2041	44 58 50	115 21 36	20.0	7.0	15.00	2.0	N	N	N	2,000	100	2	N	N	20	100	10
IH2042	44 58 41	115 21 57	20.0	3.0	10.00	>2.0	N	N	N	500	200	3	N	N	10	100	15
IH2043	44 58 31	115 22 13	20.0	3.0	2.00	>2.0	5	N	N	1,000	300	5	N	N	10	150	20
IH2045	44 58 38	115 22 4	20.0	7.0	15.00	2.0	N	N	N	700	300	3	N	N	20	50	100
IH2046	44 58 16	115 22 32	10.0	3.0	1.50	>2.0	N	N	N	200	200	5	N	N	15	200	30
IH2047	44 57 39	115 19 46	30.0	3.0	15.00	2.0	N	N	N	500	N	2	N	N	10	50	N
IH2048	44 57 38	115 19 45	5.0	2.0	1.00	>2.0	N	N	20	5,000	700	5	N	N	20	50	20
IH2049	44 57 19	115 20 25	20.0	1.0	.50	>2.0	N	N	N	100	300	2	N	N	15	20	10
IH2050	44 57 16	115 20 21	20.0	3.0	10.00	>2.0	N	N	N	2,000	70	2	N	N	50	50	10
IH2058	44 57 39	115 17 7	20.0	7.0	15.00	2.0	N	N	N	500	70	<2	N	N	20	50	30
IH2059	44 57 53	115 16 53	10.0	10.0	1.00	>2.0	30	N	100	100	500	5	N	N	15	50	100
IH2060	44 57 53	115 16 55	5.0	10.0	2.00	>2.0	N	N	N	1,000	700	3	N	N	30	70	50
IH3041	45 2 19	115 18 53	.5	10.0	.70	>2.0	N	N	N	50	700	7	N	N	15	150	30
IH3042	45 2 16	115 18 56	1.0	10.0	.30	>2.0	N	N	N	20	2,000	5	N	N	30	50	50
IH3043	45 2 57	115 19 22	5.0	10.0	.70	>2.0	N	N	N	20	1,000	7	1,000	N	15	200	100
IH3044	45 2 49	115 19 29	3.0	10.0	2.00	>2.0	15	N	30	70	500	5	N	N	20	100	20
IH3045	45 2 52	115 19 22	5.0	10.0	.50	>2.0	7	N	N	20	300	5	N	50	15	70	100
IH3046	45 3 15	115 19 31	3.0	10.0	2.00	>2.0	N	N	N	20	500	7	N	N	20	200	30
IH3047	45 3 47	115 19 14	5.0	15.0	.70	>2.0	N	N	N	50	700	7	N	N	50	500	50
IH3048	45 3 42	115 19 19	5.0	7.0	1.00	>2.0	N	N	N	20	300	5	N	N	15	300	20
IH3049	44 57 20	115 21 54	20.0	3.0	10.00	>2.0	N	N	N	2,000	100	5	N	N	15	50	15
IH3050	44 57 41	115 23 11	20.0	7.0	15.00	2.0	N	N	N	700	100	5	N	N	30	100	10
IH3051	44 57 38	115 23 45	20.0	3.0	.70	>2.0	N	N	N	700	200	3	N	N	15	300	30
IH3052	44 57 41	115 24 21	7.0	3.0	.50	>2.0	N	N	N	150	300	2	N	N	20	500	50
IH3053	44 59 8	115 24 44	10.0	5.0	7.00	>2.0	N	N	N	200	100	3	N	N	20	100	20
IH3054	45 1 20	115 17 25	5.0	5.0	.50	>2.0	N	N	N	150	300	7	N	N	15	500	100

Table 4.--Analyses of heavy-mineral-concentrate samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

SAMPLE	La	Mn	Mo	Nb	Ni	Pb	Sc	Sn	Sr	Th	V	W	Y	Zn	Zr
IH2026	500	500	100	100	10	1,000	100	N	N	N	200	N	500	N	>2,000
IH2027	700	700	70	300	15	500	100	20	N	N	200	N	200	N	>2,000
IH2028	2,000	200	<10	200	20	50	50	50	N	200	200	N	1,000	N	>2,000
IH2029	300	1,000	<10	50	20	100	20	N	N	N	200	100	300	N	>2,000
IH2030	200	700	<10	100	15	N	N	<20	300	N	150	3,000	200	N	>2,000
IH2031	1,000	1,000	N	150	15	70	50	N	<200	N	200	N	500	N	>2,000
IH2032	700	700	N	200	10	50	150	200	<200	N	500	<100	150	N	>2,000
IH2033	700	1,500	<10	200	30	N	N	N	N	N	100	500	150	N	>2,000
IH2034	700	2,000	20	200	20	N	N	N	N	<200	100	2,000	150	N	>2,000
IH2035	700	3,000	10	150	50	N	<10	N	<200	N	100	1,500	150	N	>2,000
IH2036	1,000	2,000	150	300	20	3,000	50	N	300	N	200	1,000	150	N	>2,000
IH2037	500	700	10	100	10	100	100	N	N	N	300	N	200	N	>2,000
IH2038	1,000	3,000	30	200	20	N	N	N	N	200	100	5,000	150	N	>2,000
IH2040	500	1,500	<10	100	50	N	N	N	N	N	150	1,500	100	N	>2,000
IH2041	1,500	3,000	10	100	30	N	N	N	N	500	100	2,000	300	N	>2,000
IH2042	2,000	2,000	30	300	20	N	N	<20	N	300	150	5,000	500	N	>2,000
IH2043	1,500	2,000	10	500	20	N	<10	50	N	300	200	1,500	700	N	>2,000
IH2045	1,000	2,000	30	100	20	N	N	N	N	300	100	10,000	300	N	>2,000
IH2046	2,000	1,500	10	500	15	N	<10	30	N	200	300	150	1,000	N	>2,000
IH2047	2,000	1,000	N	100	20	N	N	N	N	300	150	1,000	300	N	>2,000
IH2048	>2,000	1,000	N	500	30	20	50	30	N	5,000	150	N	2,000	N	>2,000
IH2049	2,000	700	N	<50	10	N	<10	N	<200	200	200	N	1,000	N	>2,000
IH2050	>2,000	2,000	<10	50	30	20	50	N	N	3,000	100	500	2,000	N	>2,000
IH2058	500	2,000	N	50	50	N	N	N	N	N	100	100	70	N	2,000
IH2059	2,000	1,000	<10	200	15	100	20	300	300	200	100	100	1,000	N	>2,000
IH2060	1,500	2,000	<10	300	30	70	50	50	N	200	100	100	500	N	>2,000
IH3041	700	500	10	200	20	70	50	N	N	N	100	N	300	N	>2,000
IH3042	1,000	1,000	10	100	15	150	70	N	N	<200	150	N	500	N	>2,000
IH3043	2,000	700	10	300	15	200	50	>2,000	N	200	150	200	700	N	>2,000
IH3044	700	3,000	N	100	30	70	70	<20	<200	N	150	N	200	N	>2,000
IH3045	1,500	1,000	20	150	10	1,000	30	50	N	N	100	N	500	1,000	>2,000
IH3046	1,500	1,500	10	500	150	300	50	50	N	200	100	<100	300	N	>2,000
IH3047	2,000	1,500	10	200	50	200	30	N	<200	<200	200	N	200	N	>2,000
IH3048	1,000	1,500	10	200	20	100	100	500	N	N	200	N	500	N	>2,000
IH3049	1,000	2,000	N	200	20	N	N	N	<200	<200	200	N	500	N	>2,000
IH3050	700	3,000	N	300	30	N	N	N	N	N	100	300	200	N	2,000
IH3051	>2,000	1,500	<10	300	20	N	30	20	N	700	500	N	1,000	N	>2,000
IH3052	>2,000	1,000	10	200	50	20	20	20	N	200	500	N	700	N	>2,000
IH3053	>2,000	3,000	N	300	20	20	30	N	N	1,000	200	100	1,000	N	>2,000
IH3054	700	1,000	N	100	N	150	150	20	<200	N	500	<100	200	N	>2,000

Table 4.--Analyses of heavy-mineral-concentrate samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

SAMPLE	Latitude	Longitude	Ca	Fe	Mg	Ti	Ag	As	Au	B	Ba	Be	Bi	Cd	Co	Cr	Cu
IH3055	45 0 37	115 18 2	7.0	5.0	.50	>2.0	N	N	N	100	300	3	N	N	10	200	50
IH3056	45 0 40	115 17 55	10.0	3.0	.70	>2.0	N	N	N	100	200	5	N	N	15	300	70
IH3057	45 0 43	115 18 25	3.0	7.0	.70	>2.0	N	N	N	50	500	5	N	N	20	500	70
IH3058	45 0 19	115 18 58	5.0	10.0	1.00	>2.0	100	N	1,000	70	300	3	N	N	30	200	70
IH3059	45 0 18	115 18 52	5.0	5.0	.50	>2.0	N	N	N	30	300	5	N	N	15	300	70
IH3060	44 59 34	115 19 47	20.0	7.0	20.00	2.0	N	N	N	500	N	3	N	N	20	70	15
IH3061	45 0 45	115 20 8	20.0	5.0	15.00	>2.0	N	N	N	500	70	5	N	N	10	100	20
IH3062	45 0 40	115 20 7	20.0	5.0	20.00	>2.0	N	N	N	500	N	7	N	N	10	50	10
IH3064	44 59 55	115 20 1	15.0	7.0	20.00	1.0	N	N	N	200	N	2	N	N	20	50	N
IH3065	44 59 57	115 19 57	15.0	10.0	20.00	>2.0	N	N	N	500	N	5	N	N	10	100	15
IH3067	45 0 14	115 24 4	20.0	5.0	1.50	>2.0	N	N	N	500	200	3	N	N	20	200	30
IH3068	45 1 0	115 21 52	20.0	10.0	10.00	>2.0	N	N	20	150	200	5	N	N	15	100	30
IH3069	45 0 30	115 22 18	20.0	10.0	15.00	1.0	N	N	N	700	300	5	N	N	150	50	50
IH3070	45 0 19	115 22 43	30.0	10.0	15.00	1.0	N	N	N	300	150	5	N	N	20	70	N
IH3071	45 0 17	115 22 58	20.0	7.0	15.00	2.0	N	N	N	1,000	100	7	N	N	15	70	10
IH3073	45 1 12	115 23 35	30.0	5.0	15.00	1.5	N	N	N	100	70	3	N	N	20	50	15
IH3074	45 1 39	115 23 57	30.0	5.0	15.00	>2.0	N	N	N	100	N	<2	N	N	15	50	<10
IH3075	45 1 37	115 24 12	10.0	1.5	5.00	>2.0	N	N	N	1,000	150	5	N	N	15	300	<10
IH3076	45 1 50	115 24 29	30.0	7.0	15.00	2.0	N	N	N	50	N	2	N	N	15	50	100
IH3077	45 2 12	115 24 27	30.0	7.0	15.00	>2.0	N	N	N	300	200	3	N	N	15	100	20
IH3078	45 2 30	115 25 17	20.0	5.0	15.00	1.0	N	N	N	100	N	3	N	N	15	200	10
IH3079	45 3 2	115 24 17	15.0	3.0	.50	>2.0	30	5,000	N	70	200	2	N	N	15	70	50
IH3080	45 3 57	115 24 3	20.0	10.0	.50	>2.0	7	N	N	200	500	30	N	N	20	50	30
IH3081	45 3 46	115 25 2	5.0	3.0	1.50	>2.0	N	N	N	150	200	500	N	N	15	1,000	10
IH3082	45 4 19	115 24 23	10.0	5.0	1.50	>2.0	N	N	N	100	700	5	N	N	15	500	20
IH3083	45 4 15	115 23 17	5.0	10.0	.50	>2.0	N	N	N	50	500	7	N	N	30	100	30
IH3084	45 4 17	115 23 23	10.0	7.0	.30	>2.0	N	N	N	100	5,000	3	N	N	30	200	30
IH3085	45 4 8	115 21 50	3.0	2.0	.15	>2.0	15	N	20	20	100	2	N	N	<10	70	70
IH3086	45 4 11	115 21 51	10.0	3.0	1.00	>2.0	N	N	N	200	500	3	N	N	15	200	20
IH3087	45 4 44	115 20 4	5.0	5.0	1.00	>2.0	N	N	N	70	500	10	N	N	20	500	30
IH3088	45 4 42	115 20 58	5.0	7.0	2.00	>2.0	N	N	N	70	300	5	N	N	20	300	20
IH3089	45 7 6	115 19 1	20.0	5.0	1.00	>2.0	N	N	N	5,000	10,000	2	100	N	30	100	20
IH3090	45 7 5	115 19 9	10.0	3.0	1.50	>2.0	N	N	N	2,000	10,000	7	N	N	70	100	50
IH3091	45 8 18	115 19 8	20.0	5.0	15.00	1.5	N	N	N	500	<50	<2	N	N	15	70	10
IH3092	45 5 23	115 19 34	7.0	10.0	1.00	>2.0	N	N	N	2,000	500	10	N	N	20	300	30
IH3093	45 8 31	115 18 55	20.0	5.0	15.00	1.0	N	N	N	500	150	5	N	N	15	50	<10
IH3094	45 7 42	115 19 31	5.0	5.0	5.00	>2.0	N	N	N	1,500	300	7	N	N	15	500	15
IH3095	45 8 35	115 18 35	10.0	1.5	2.00	>2.0	5	N	N	500	3,000	5	N	N	30	70	50

Table 4.--Analyses of heavy-mineral-concentrate samples, The Pinnacles Addition, River of No Return Wilderness, Idaho--CONTINUED

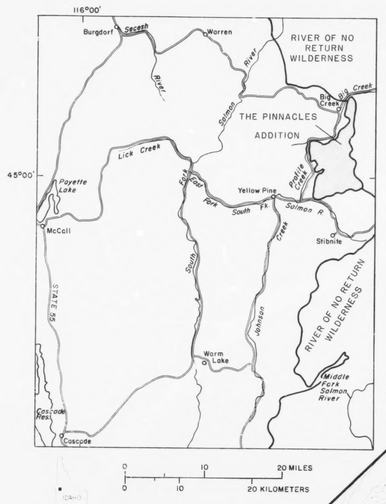
SAMPLE	La	Mn	Mo	Nb	Ni	Pb	Sc	Sn	Sr	Th	V	W	Y	Zn	Zr
IW3055	700	1,500	N	150	10	50	150	N	500	N	500	N	150	N	>2,000
IW3056	700	1,000	N	150	10	70	150	N	300	N	500	N	200	N	>2,000
IW3057	500	1,000	N	300	20	150	150	<20	N	N	500	100	200	N	>2,000
IW3058	700	1,500	150	100	20	1,000	100	N	N	N	150	<100	300	N	>2,000
IW3059	700	1,500	N	200	20	100	150	<20	300	N	500	<100	200	N	>2,000
IW3060	500	2,000	N	200	50	N	N	N	N	N	100	150	100	N	2,000
IW3061	150	5,000	N	150	15	N	<10	N	N	N	150	N	100	N	>2,000
IW3062	200	5,000	N	500	20	N	N	N	N	N	100	300	100	N	>2,000
IW3064	100	1,500	N	150	30	N	N	N	N	N	100	N	100	N	1,000
IW3065	500	5,000	N	1,000	20	N	N	N	N	<200	200	N	1,000	N	>2,000
IW3067	>2,000	2,000	<10	200	20	20	30	20	N	500	500	300	1,000	N	>2,000
IW3068	200	3,000	20	2,000	20	150	20	<20	N	N	200	100	300	N	>2,000
IW3069	100	2,000	N	50	50	N	N	N	N	N	150	100	50	N	1,000
IW3070	100	2,000	N	50	30	N	<10	N	<200	N	150	N	20	N	500
IW3071	500	3,000	N	200	30	N	N	N	N	N	150	200	200	N	2,000
IW3073	700	2,000	N	100	30	20	N	N	<200	N	100	500	70	N	2,000
IW3074	2,000	1,500	N	300	15	700	<10	N	N	500	150	200	200	N	1,000
IW3075	700	1,000	10	700	15	N	10	30	N	N	700	300	300	N	>2,000
IW3076	500	2,000	<10	200	20	N	N	N	N	N	100	500	200	N	2,000
IW3077	1,000	1,500	N	300	20	100	10	N	<200	200	150	500	200	N	>2,000
IW3078	100	5,000	N	<50	30	N	N	N	N	N	150	300	30	N	2,000
IW3079	>2,000	1,000	20	200	15	20,000	20	<20	500	300	200	N	1,000	N	>2,000
IW3080	>2,000	1,500	N	300	20	700	30	<20	500	500	200	100	1,000	N	>2,000
IW3081	1,500	5,000	N	200	30	50	150	150	<200	200	150	200	1,000	N	>2,000
IW3082	700	1,500	<10	200	30	300	30	<20	500	N	200	200	700	N	>2,000
IW3083	>2,000	1,000	N	150	50	100	50	N	N	500	100	N	1,000	N	>2,000
IW3084	>2,000	2,000	N	150	20	70	30	<20	300	200	150	100	1,000	N	>2,000
IW3085	1,500	200	N	200	15	50	100	150	N	N	500	<100	500	N	>2,000
IW3086	>2,000	2,000	N	150	20	70	20	50	300	300	150	100	1,000	N	>2,000
IW3087	2,000	2,000	30	100	30	2,000	100	1,000	300	N	200	150	500	N	>2,000
IW3088	1,000	2,000	70	100	50	100	30	<20	500	N	300	N	300	N	>2,000
IW3089	700	1,000	N	100	30	200	N	N	1,000	N	200	150	200	N	>2,000
IW3090	2,000	1,000	N	200	20	50	<10	200	500	200	200	150	700	N	>2,000
IW3091	N	2,000	N	<50	30	N	N	N	N	N	100	200	30	N	200
IW3092	1,500	1,500	N	70	70	50	<10	N	<200	1,000	200	N	200	N	>2,000
IW3093	N	2,000	N	N	30	N	N	N	N	N	100	N	20	N	500
IW3094	700	2,000	N	100	50	20	N	N	<200	N	150	2,000	200	N	>2,000
IW3095	>2,000	1,000	N	200	15	1,000	30	500	N	500	150	500	700	N	>2,000

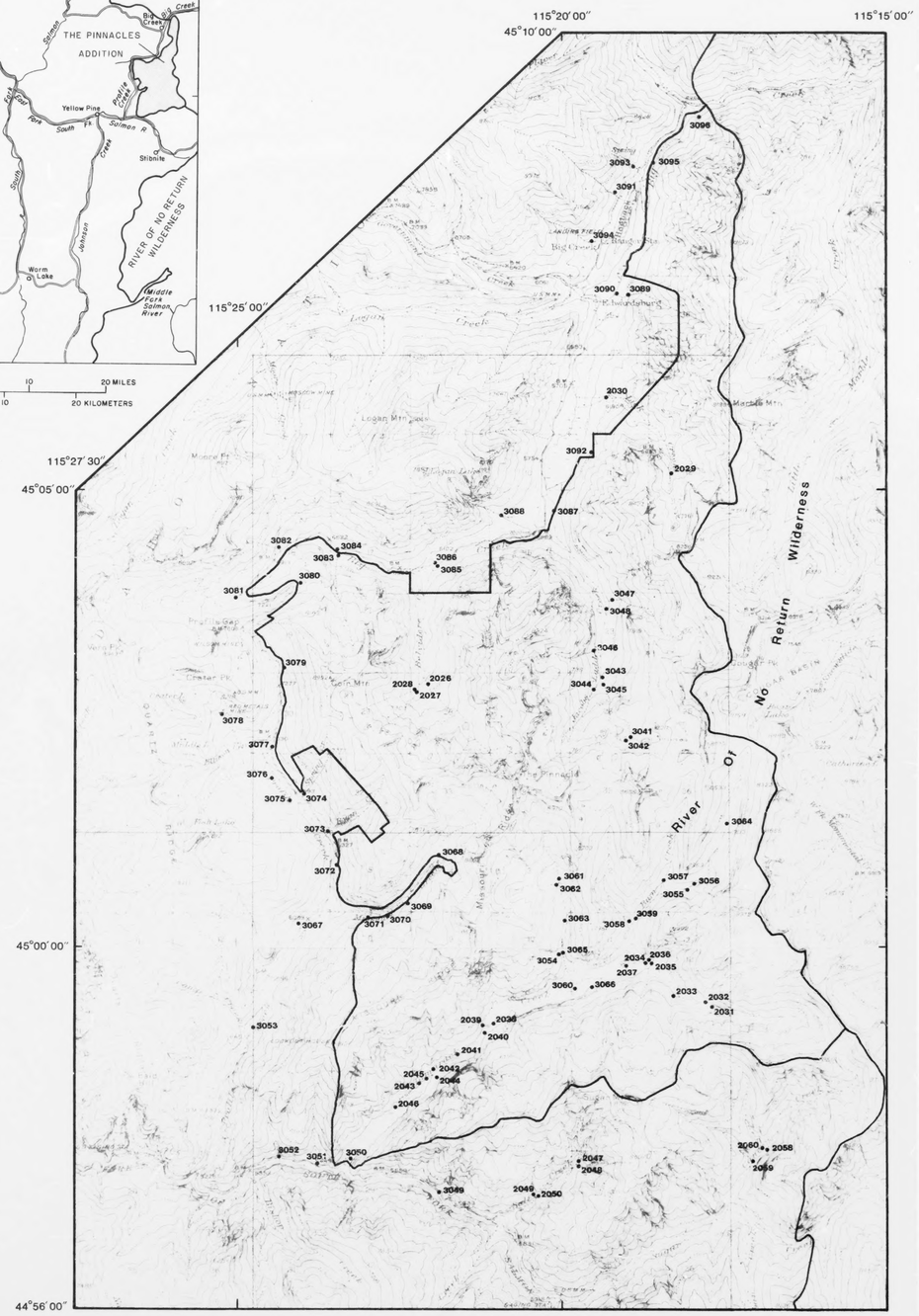
TABLE 5. Gold in raw panned-concentrate samples, The Pinnacles Addition, River of No Return Wilderness, Idaho

Sample	Latitude	Longitude	Number of pans	Weight of concentrate (g)	Au in concentrate (ppm)	Au per pan (ug)
IG2026	45 02 51	115 22 02	1 3/4	3.08	2.8	4.9
IG2027	45 02 48	115 22 09	1	3.59	.10	.36
IG2028	45 02 49	115 22 10	1	3.19	22	70
IG2029	45 05 12	115 18 20	1	5.43	<.092	<.50
IG2030	45 06 01	115 19 24	1	5.19	<.096	<.50
IG2031	44 59 21	115 17 41	1	5.94	.10	.59
IG2032	44 59 23	115 17 47	1	4.37	.40	1.7
IG2033	44 59 28	115 18 16	1	4.83	.050	.24
IG2034	44 59 45	115 18 43	1	8.84	N(.057)	N(.50)
IG2035	44 59 45	115 18 38	1	3.87	2.5	9.7
IG2036	44 59 47	115 18 40	1	5.70	2.2	13
IG2037	44 59 45	115 19 01	1	8.36	1.0	8.4
IG2038	44 59 09	115 21 02	1	6.72	3.9	26
IG2039	44 59 09	115 21 13	1	7.04	.050	.35
IG2040	44 59 05	115 21 11	1	7.53	20	150
IG2041	44 58 50	115 21 36	1	4.92	.10	.49
IG2042	44 58 41	115 21 57	1	5.79	.050	.29
IG2043	44 58 31	115 22 13	1	10.27	N(.049)	N(.50)
IG2045	44 58 34	115 22 04	1	9.68	50	480
IG2046	44 58 16	115 22 32	1	9.29	N(.054)	N(.50)
IG2047	44 57 39	115 19 46	1	5.52	N(.091)	N(.50)
IG2048	44 57 38	115 19 45	1	5.42	2.3	12
IG2049	44 57 19	115 20 25	1	8.26	.35	2.9
IG2050	44 57 16	115 20 21	1	6.58	7.2	47
IG2058	44 57 39	115 17 07	1	5.40	N(.093)	N(.50)
IG2059	44 57 53	115 16 53	1	4.55	.95	4.3
IG2060	44 57 53	115 16 55	1	3.30	1.8	5.9
IG3041	45 02 19	115 18 53	1	6.43	<.078	<.50
IG3042	45 02 16	115 18 56	1	9.02	N(.055)	N(.50)
IG3043	45 02 57	115 19 22	1	10.18	N(.049)	N(.50)
IG3044	45 02 49	115 19 29	1	8.14	.85	6.9
IG3045	45 02 52	115 19 22	1	6.20	N(.081)	N(.50)
IG3046	45 03 15	115 19 31	1	4.11	4.8	20
IG3047	45 03 47	115 19 14	1	10.01	N(.050)	N(.50)
IG3048	45 03 42	115 19 19	1	5.43	N(.092)	N(.50)
IG3049	44 57 20	115 21 54	1	10.76	<.047	<.50
IG3050	44 57 41	115 23 11	1	24.73	2.5	62
IG3051	44 57 38	115 23 45	1	10.46	N(.048)	N(.50)
IG3052	44 57 41	115 24 21	1	24.27	.10	2.4
IG3053	44 59 08	115 24 44	1	8.33	N(.060)	N(.50)
IG3054	45 01 20	115 17 26	1	4.47	N(.11)	N(.50)
IG3055	45 00 37	115 18 02	1	4.54	N(.11)	N(.50)
IG3056	45 00 40	115 17 55	1	6.22	.050	.31
IG3057	45 00 43	115 18 25	1	3.33	.060	.20
IG3058	45 00 19	115 18 58	1	4.49	<.11	<.50
IG3059	45 00 18	115 18 52	1	5.08	N(.098)	N(.50)
IG3060	44 59 34	115 19 47	1	9.37	N(.053)	N(.50)
IG3061	45 00 45	115 20 08	1	2.99	N(.17)	N(.50)
IG3062	45 00 40	115 20 07	1	6.01	N(.083)	N(.50)
IG3064	44 59 55	115 20 01	1	9.84	N(.051)	N(.50)
IG3065	44 59 57	115 19 57	1	3.54	N(.14)	N(.50)
IG3067	45 00 14	115 24 04	1	9.77	N(.051)	N(.50)
IG3068	45 01 00	115 21 52	1	7.75	3.1	24
IG3069	45 00 30	115 22 18	1	7.77	<.064	<.50
IG3071	45 00 17	115 22 58	1	8.09	N(.062)	N(.50)
IG3073	45 01 12	115 23 35	1	7.36	1.5	11
IG3074	45 01 39	115 23 57	1	4.81	<.10	<.50
IG3075	45 01 37	115 24 12	1	5.30	N(.094)	N(.50)
IG3076	45 01 50	115 24 29	1	3.52	.090	.32
IG3077	45 02 12	115 24 27	1	10.14	13	130
IG3078	45 02 30	115 25 17	1	9.61	.25	2.4
IG3079	45 03 02	115 24 17	1	8.89	1.5	13
IG3080	45 03 57	115 24 03	1	3.56	.15	.53
IG3081	45 03 46	115 25 02	1	6.27	.060	.38
IG3082	45 04 19	115 24 23	1	5.00	1.6	8.0
IG3083	45 04 15	115 23 17	1	11.87	.25	3.0
IG3084	45 04 17	115 23 23	1	12.47	1.8	22
IG3085	45 04 08	115 21 50	1	3.84	6.0	23
IG3086	45 04 11	115 21 51	1	3.30	1.5	5.0
IG3087	45 04 44	115 20 04	1	4.78	<.10	<.50
IG3088	45 04 42	115 20 58	1	4.03	.050	.20
IG3089	45 07 06	115 19 01	1	11.22	N(.045)	N(.50)
IG3090	45 07 05	115 19 09	1	18.08	.40	7.2
IG3091	45 08 18	115 19 08	1/2	11.30	N(.044)	N(1.0)
IG3092	45 05 23	115 19 34	1	9.33	N(.054)	N(.50)
IG3093	45 08 31	115 18 55	1	9.32	N(.054)	N(.50)

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

OPEN-FILE REPORT 84-833
PLATE 1





Base from U.S. Geological Survey 1:62,000- scale maps of the Big Creek (1952) and Yellow Pine (1941) quadrangles.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

MAP OF STREAM-SEDIMENT AND PANNED-CONCENTRATE SAMPLE SITES, THE PINNACLES ADDITION TO THE RIVER OF NO RETURN WILDERNESS, VALLEY COUNTY, IDAHO

By
Betty M. Adrian, John D. Sharkey, and Gary A. Nowlan

1984